



## **NIGERIAN POSTGRADUATE STUDENTS' ATTITUDE AND PERCEIVED COMPETENCE IN USING ICT RESOURCES FOR RESEARCH PURPOSE**

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### **ABSTRACT**

*The study aims to investigate the attitudes of Nigerian postgraduate students towards information and communication technology (ICT) and their perceived competence in using ICT resources for research purpose. The influence of field of studies on their competence and attitude were also examined. A total of 77 Nigerian postgraduate students at a university in Malaysia were randomly selected for the study. Data collected through questionnaires were analysed using descriptive and inferential statistic approaches. The analysis reveals that majority of the postgraduate students have positive attitude towards ICT and they perceive that they are competent in using several basic ICT tools. There is no significant difference between science and non-science based postgraduate students' attitudes, however, there is significant difference in their perceived competence. This paper concludes that the postgraduate students require more hands-on experiences and special training programs so that they can maximize the use of ICT for research purpose. It is hoped that the findings revealed in this study will help the policy makers in designing necessary courses to improve the quality of postgraduates in the country.*

**Keywords:** Information and communication technology, Malaysia, Nigerian student, postgraduate, students' attitude

### **1.0 INTRODUCTION**

Information and communication technologies (ICTs) refer to technological tools and resources which are employed to communicate, create, disseminate and manage information (Nordin et al., 2010). There is a growing demand on educational institutions to use ICT in all aspects of teaching and research. ICT is not only the backbone of the Information Society, but also an important tool for introducing educational innovations that change the learning style (Pelgrum, 2001; Rashid et al., 2017). However, successful integration of ICT in education depends on the learners' attitude towards the technology.

Attitude plays an important role in determining people's reactions to particular situations (Al-Zaidiyeen, Lai Mei, & Fook, 2010). Attitude is a predisposition to respond favourably or unfavourably to an object, person, or event (Ajzen, 1988). Allport (1935) defines it as "a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (p. 810). A person's attitude toward computer is influenced by many factors, such as computer anxiety or comfort (Bandalos & Benson, 1990), age and gender (Kutluca, 2010).

Abedalaziz, Jamaluddin, and Chin (2013) investigated postgraduate students' attitudes toward the internet and computer use. The respondents were 289 postgraduate students from the Faculty of Education, University of Malaya. The findings showed that postgraduate students have positive attitudes toward computer and Internet usage. No significant differences were found between participants' attitudes toward the Internet and computer related to gender, field of study, and ethnicity. Teo (2008) conducted a survey on pre-service teachers' attitudes towards computer use in Singapore context. A total of 139 pre-service teachers were assessed for their attitudes towards computers using a questionnaire with four constructs: affect (liking), perceived usefulness, perceived control, and behavioural intention to use computers. Teo found that the teachers were more positive about their attitude towards computers and intention to use computers than their perceptions of the usefulness of computers and their control of the computers.

The main purpose of this study is to investigate the attitude and the perceived competence of Nigerian postgraduate students at Universiti Sultan Zainal Abidin, Malaysia in using ICT for research purpose. There are four research questions: 1) What is the postgraduate students' attitude towards ICT?; 2) What is the level of postgraduate students' perceived competence in the use of ICT?; 3) Is there any significant difference between science and non-science based postgraduate students' attitudes towards ICT?; and 4) Is there any significant difference between science and non-science based postgraduate students' perceived competence in the use of ICT? Two hypotheses were generated and tested. Firstly,  $H_{01}$ . There is no significant difference between science and non-science based postgraduate students' attitudes towards ICT. Secondly,  $H_{02}$ . There is no significant difference between science and non-science based postgraduate students' perceived competence in the use of ICT.

## 2.0 METHODOLOGY

This study is a quantitative study which employed descriptive survey approach. The population for the study was the entire 122 Nigerian postgraduate students, currently enrolled into Master and Doctoral Degrees at Universiti Sultan Zainal Abidin, Malaysia. A total of 77 postgraduate students were randomly selected from the nine faculties of the university. The instrument used for data collection is the ICT Attitude and Competence Questionnaire (IACQ) which contained four sections. Section A of the questionnaire focused on demographic information of postgraduate students: Field of study, Programme, Sex and Age. Section B contained 20 items to measure the postgraduate students' attitude towards Information and Communication Technology (ICT) which was developed by the researchers based on established procedures in literature. The four-Likert response mode of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) was used. Section C is adopted and modified from Yusuf and Balogun (2011) and it contained 21 items to measure the postgraduate students' level of perceived competence in the use of ICT. The modes of response were: "I am fully competent with this application/operation" (FC coded 5); "I am a regular and confident user of this application"

(RCU coded 4); “I have used this occasionally but need further training” (OU coded 3); “I do not use” (DU coded 2); and “I am not aware of this application/operation” (NA coded 1).

To test the instrument’s validity and reliability, the initial draft of the 41 items were pre-tested with 25 postgraduate students. The feedback obtained from this first administration was used to revise the final instrument. The internal consistency of the questionnaire was determined through Cronbach’s alpha coefficient with the overall reliability coefficients obtained for the two sections (B and C) of the instruments were 0.76 (attitude), 0.86 (ICT Competency). The ICT Attitude and Competence Questionnaires (IACQ) were distributed to postgraduate students randomly selected for the studies. All 77 copies were returned, at a return and usable rate of 100%.

The data obtained were analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics (frequency, percentages, means, and standard deviations) and inferential statistics such as Independent-Sample T-test were used to test the hypotheses at 0.05 level of significance. On the attitude scales the four-likert scales were merged into two i.e. (SA and A) Agreed and (SD and D) Disagreed.

### 3.0 RESULTS AND DISCUSSION

Table 1: Demographic Information

Variables		Number	%
Gender	Male	73	94.8%
	Female	4	5.2%
Field of Study	Science	43	55.8%
	Non-Science	34	44.2%

Table 1 shows the demographic information of the respondents. There were 73 (94.8%) male and four (5.2%) female postgraduate students took part in the study. There were 43 (55.8%) science-based students and 34 (44.2%) non-science based students.

#### 3.1 Research Question 1: What is the postgraduate students’ attitude towards ICT?

Table 2: The attitude of postgraduate students towards ICT

S/N	Items	N	Mean	Agree	Disagree
1	ICT enhances students’ learning.	77	3.78	77(100)	0(00)
2	Postgraduate program should include ICT	77	3.62	77(100)	0(00)
3	Mail creates more information between students and supervisors.	77	3.43	70(90.9)	7(9.1)
4	ICT provides better learning and research experiences.	77	3.65	77(100)	0(00)
5	I learn more from ICT than I do from books.	77	3.35	70(90.9)	7(9.1)
6	ICT makes research more interesting.	77	3.69	77(100)	0(00)
7	ICT skill is worthwhile.	77	3.49	77(100)	0(00)
8	ICT gives opportunity to learn more.	77	3.62	75(97.4)	2(2.6)
9	I will not have anything to do with ICT.	77	3.62	4(5.2)	73(94.8)
10	I have phobia for ICT equipment.	77	3.26	15(19.5)	62(80.5)
11	ICT cannot address the needs of Postgraduate System.	77	3.29	9(11.7)	68(88.3)
12	ICT save time and effort in research	77	3.08	73(94.8)	4(5.2)
13	Students must use ICT in all the study areas	77	2.87	53(68.8)	24(31.2)
14	Learning about ICT is a waste of time	77	3.66	2(2.6)	75(97.4)
15	ICT motivates me to do more on my research	77	3.60	73(94.8)	4(5.2)

16	ICT is a fast and efficient means of getting information	77	3.71	77(100)	0(00)
17	I do not think I would ever need ICT in my future research	77	3.65	0(00)	77(100)
18	ICT does more harm than good	77	3.45	2(2.6)	75(97.4)
19	I would rather do things by hand than with ICT	77	3.47	0(00)	77(100)
20	I have no intention to use ICT in my future research	77	3.65	0(00)	77(100)

*\*Figures in parentheses are percentages*

The results shown in Table 2 shows that the students have positive attitude towards ICT. They respond positively for items 1,2,3,4,5,6,7,8,12,13,15, and 16. Overall over 80% of postgraduate students have a positive attitude towards ICT. It can be seen that respondents agreed that ICT enhances learning and facilitate research process. Only about 5.2% of the respondents feel that ICT is not important to them. For item 10, 19.5% of respondents agreed that they have phobia in using ICT equipment. For item 11, about 11.7% of the respondents disagreed that ICT cannot address the needs of postgraduate system. For item 14, only 2.6% of the respondents agreed that learning to use ICT is a waste of time. Based on the analysis shown in Table 2 above, it can be concluded that the respondents have positive attitude towards ICT.

### 3.2 Research Question 2: What is the level of postgraduate students' perceived competence in using ICT?

Table 3: The perceived competence in using ICT resources

S/N	Items	FC	RCU	OU	DU	NA
1	I can locate and run an application program e.g. word	37(48.1)	38(49.4)	2(2.6)	0(00)	0(00)
2	I can search for files on computer system	45(58.4)	28(36.4)	4(5.2)	0(00)	0(00)
3	I can connect the computer and its peripherals	37(48.1)	28(36.4)	12(15.6)	0(00)	0(00)
4	I can access information on CD/DVD	37(48.1)	34(44.2)	4(5.2)	2(2.6)	0(00)
5	I can organize electronic files into folders	38(49.4)	29(37.7)	8(10.4)	2(2.6)	0(00)
6	I am aware of computer security, copyright and the law	24(31.2)	22(28.6)	15(19.5)	12(15)	4(5.2)
7	I am aware of health and safety issues relating to the computing environment.	27(35.1)	21(27.3)	12(15.6)	17(22)	0(00)
8	I can use simple editing e.g. bold, italics, centering, font size, etc.	52(67.5)	23(29.9)	2(2.6)	0(00)	0(00)
9	I can use spread sheet package very well.	23(29.9)	25(32.5)	22(28.6)	2(2.6)	5(6.5)
10	I can sort and filter data	26(33.8)	18(23.4)	24(31.2)	3(3.9)	6(7.8)
11	I can create a basic presentation package	38(49.4)	22(28.6)	12(15.6)	3(3.9)	2(2.6)
12	I can set up a database	16(20.8)	17(22.1)	25(32.5)	15(19)	4(5.2)
13	I can access an Internet site via its website address	52(67.5)	17(22.1)	5(6.5)	2(2.6)	1(1.3)
14	I can download files from the Internet.	49(63.6)	26(33.8)	2(2.6)	0(00)	0(00)

15	I can send and receive e-mail messages.	55(71.4)	22(31.2)	0(00)	0(00)	0(00)
16	I can save a document in various file formats including HTML.	36(46.8)	31(40.3)	6(7.8)	4(5.2)	0(00)
17	I can use web search engines (Google, Alltheweb, AltaVista, etc.) very well.	53(68.8)	24(31.2)	0(00)	0(00)	0(00)
18	I can do deep web searching using appropriate meta- search engines (Surf Wax, Vivissimo, HotBot, etc.) very well.	24(31.2)	26(33.8)	14(18.2)	3(3.9)	10(13)
19	I can use a digital camera to capture images.	32(41.6)	25(32.5)	12(15.6)	6(7.8)	2(2.6)
20	I can set up and use Liquid Crystal Display (LCD) or Multimedia Projector	24(31.2)	16(20.8)	18(23.4)	9(11.7)	10(13)
21	I can use a scanner to copy images	30(39)	30(39)	10(13)	5(5.6)	2(2.6)

*\*Figures in parentheses are percentages*

Based on the analysis shown in Table 3, the respondents perceived that they are competent in using ICT resources. For items 1, 2, 3, 4, 8, 9, 11, 13, 14, 15, 16, 17, 18, 19, 20 and 21, over 50 percent perceived that they are fully competent or are regular and confident user of these applications/operations. However for items 10 and 12, over 50% of the respondents noted that they need further training on these applications.

For items 6, 7, 9, 11, 18, 28, and 20, a significant number of respondents indicated that they had occasionally used these applications but they need further training. The overall results showed that the respondents indicated competency in the use of ICT resources. However, for items 10 and 12, more than 50% respondents are not fully competent or are regular and confident users as they indicated that they cannot sort and filter data and set up database. Similarly for items 6, 7, 9, 11, 18, 28, and 20 a significant number of respondents (up to 40%) have indicated that, they have occasionally used these applications but they need further training. From the analysis shown in Table 3, it can be concluded that the Nigerian postgraduate students perceived themselves as competent in using ICT resources but need they further trainings on Spread sheet, presentation, database packages and the use of Internet resources.

Based on the perceived competence revealed, further information on how they acquired their ICT knowledge was elicited and the results are presented in Table 4.

Table 4: Sources of ICT knowledge

Variables	Special course outside University	Course by the University	Taught by friends or Family	Self-taught
<b>Participants</b>	31(40.3)	9(11.7)	19(24.7)	18(23.4)

*\*Figures in parentheses are percentages*

As shown in Table 4, 0.35% of the postgraduate students obtained their ICT knowledge and skills on special course outside the university. Only 11.7% indicated that they learnt their skills from courses organised by the university. 24.7% of the students were taught by friends or family members and 23.4% learned their skill by themselves (self-taught). These findings indicate that most of the postgraduate students (88.3%) acquired their ICT knowledge independent of the university. This suggests that there is very limited ICT trainings or courses available at the university for postgraduate students.

**Hypothesis 1:** There is no significant difference between science and non-science based postgraduate students' attitudes towards ICT

Table 5: Results of t-test showing the difference between science and non-science based postgraduate students' attitudes towards ICT

	Mean		Std Deviation		t	df	p
	Science	non-science	Science	non-science			
ICT Attitude	2.7278	2.7083	.16557	.14608	.547	75	.586

As seen in Table 5, there is no statistically significant difference in the postgraduate students' attitude toward ICT between the science based ( $M=2.7278$ ,  $SD = 0.16557$ ) and non-science based ( $M= 2.7083$ ,  $SD = 0.14608$ ), where  $t(75) = .547$ ,  $p = .586$ ,  $\alpha = .05$ . We therefore accept the null hypothesis on field of study, since the observed  $t$  is not statistically significant; thus indicating no statistically significant difference between science and non-science postgraduate students' attitude toward ICT. Therefore, it can be concluded that field of study has no influence on the students' attitude towards ICT.

**Hypothesis 2:** There is no significant difference between science and non-science based postgraduate students' perceived competence in using ICT.

Table 6: Results of t-test showing the difference between science and non-science based postgraduate students' perceived competence in using ICT

	Mean		Std Deviation		t	df	p
	Science	non-science	Science	non-science			
ICT Competence	4.4346	3.9158	.49631	.57674	4.164	75	.000

Table 6 shows a statistically significant difference in the postgraduate students' perceived competence in using ICT resources between science-based ( $M=4.4346$ ,  $SD = 0.49631$ ) and non-science based ( $M=3.9158$ ,  $SD = 0.57674$ ), where  $t(75) = 4.164$ ,  $p = .00$ ,  $\alpha = .05$ . We therefore reject the null hypothesis on postgraduate students' perceived competence since the observed  $t$  is statistically significant; thus indicating a statistically significant difference between science and non-science based postgraduate students' competence in using ICT resources. The mean score for science and non-science based students indicates that the science based students' perceived competence in using ICT resources is higher than the non-science based students'. The mean score for the science based students is 4.9631, whilst the mean score for the non-science based students is 3.9158.

#### 4.0 CONCLUSION AND RECOMMENDATIONS

The Nigerian postgraduate students who took part in this study have positive attitude towards the use of ICT for research purpose. The students perceived that they are competent in general computer operation, word processing, and in using basic internet resources. However, they have limited skills in using spreadsheet, database, presentation, and internet resources, and they need more trainings in handling the applications. The field of study had no significant influence on their attitude towards ICT. However a significant difference was established between science and non-science based postgraduate students in their perceived competence in using ICT resources. It is also discovered that most of the postgraduate students at the university

(88.3%) learned their current ICT skills outside the university. This finding suggests that the university has limited formal ICT trainings for postgraduate students.

Based on the findings of this research and considering the fact that, most of the Nigerian postgraduate students at the university are teachers in schools and some of them will potentially take teaching responsibilities after completion of their program, it is recommended for the university to introduce ICT resources in the research methodology course or provide special training programs on ICT. The students need hands-on experiences so that they can maximize the use of ICT for research purpose.

The sample size in this study was not large enough to allow for cross validation of results. In addition, other significant variables that influence the attitudes, such as gender and accessibility to ICT are excluded. Further studies should be encouraged to add more variables that may influence the attitude, with a large and more representative sample of postgraduate students from different universities which is likely to shed more light on the phenomenon being investigated.

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